



NON-TITLE V TECHNICAL SUPPORT DOCUMENT

PERMIT NUMBER: 040136
BUSINESS NAME: Hickman's Egg Ranch
SOURCE TYPE: Poultry Egg Production
PERMIT ENGINEER: Sara Seuberling

App. ID(s): 401238, 403281
Revision(s): 2.0.0.0 & 2.0.1.0
Revision Type(s): Renewal & Minor Modification
Date Prepared: 07/31/2014

BACT: No **MACT:** Yes **NSPS:** Yes **SYNTH MINOR:** No **AIRS:** No
DUST PLAN REQUIRED: No **DUST PLAN RECEIVED:** No
O&M PLAN REQUIRED: No **O&M PLAN RECEIVED:** No
PORTABLE SOURCE: No **SITE VISIT:** No

PROCESS DESCRIPTION:

This facility houses chickens for the production of eggs for human consumption. Each barn is equipped with an emergency generator, which emits products of combustion while in operation. A crematory is located on-site for the disposal of chicken carcasses but is not currently connected to a gas source. Non-resale gasoline is stored and dispensed on-site, which emits volatile organic compounds. Particulate emissions are produced from an on-site feed mill used to produce food for the chickens housed at the facility. Sources of dust from the mill result primarily from grain handling, grinding and mixing operations. Composting, feed delivery, unpaved roads, and unpaved parking lots also produce particulate emissions. However, the Department determined upon the advice of County Attorney, Kevin Costello, that these sources qualify for the agricultural exemption under Rule 310 (see attached e-mail in the Appendix).

PERMIT HISTORY:

Date Received	Revision Number	Description
10/15/2004	0.0.0.0	Submitted application for new permit to operate a crematory and emergency generators at the egg farm.
03/09/2011	0.0.1.0	Minor modification requested to add emergency generators and gasoline storage to the equipment list.
03/10/2011	1.0.0.0	Submitted permit renewal application.
10/11/2011	0.0.2.0	Minor modification requested to add a feed mill to the facility
12/07/2011	1.0.1.0	Minor modification requested to install a grain receiving and storage operation at the facility.
05/20/2013	1.0.2.0	Minor modification requested to add three emergency generators to the equipment list.
06/24/14	2.0.0.0	Submitted permit renewal application.
06/24/14	2.0.1.0	Minor modification requested to add three emergency generators to the equipment list.

PURPOSE FOR APPLICATION:

Renewal and minor modification to add three emergency generators to the equipment list.

A. APPLICABLE COUNTY REGULATIONS:

Rule 100: General Provisions and Definitions
Rule 200: Permit Requirements
Rule 220: Non-Title V Permit Provisions
Rule 280: Fees: Table B (Animal Feed Processing)

Rule 300: Visible Emissions
 Rule 310: Fugitive Dust Sources
 Rule 311: Particulate Matter from Process Industries
 Rule 314: Open Outdoor Fires
 Rule 320: Odors & Gaseous Air Pollutants
 Rule 324: Stationary Internal Combustion Engines
 Rule 353: Gasoline in Stationary Dispensing Tanks

B. APPLICABLE FEDERAL REGULATIONS:

40 CFR 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition ICE) applies to each diesel-fueled generator manufactured after 4/1/06.

40 CFR 63 Subpart ZZZZ (NESHAP for Stationary RICE) applies to each engine not subject to 40 CFR 60 Subpart IIII.

40 CFR 63 Subpart CCCCCC (NESHAP for Gasoline Dispensing Facilities) applies to the gasoline storage tank.

Non-Applicable Federal Regulations

40 CFR 60 Subpart DD (Standards of Performance for Grain Elevators) does not apply to the facility since the grain storage and processing operations do not meet the definition of grain terminal elevator or grain storage elevator provided in 40 CFR 60.301. Grain terminal elevators do not include those located at livestock feedlots. None of the feed is meant for human consumption so dry corn milling does not meet the definition of grain storage elevator.

40 CFR 63 Subpart DDDDDDD (NESHAP for Area Sources: Prepared Feeds Manufacturing): This facility is primarily engaged in raising/feeding chickens so it is not classified as a prepared feed manufacturing facility, per 40 CFR 63.11627. If this facility was considered a prepared feed manufacturing facility, it would most likely be subject to this Subpart since a material used in the feed contains manganese in excess of 1.0% by weight.

C. AIR POLLUTION CONTROL EQUIPMENT/EMISSION CONTROL SYSTEM(s):

System description	Quantity	Comments:
Corn Grinder	1	The grinder is self-contained to reduce particulate emissions. Since the equipment does not have any control devices, an O&M Plan is not required
Feed Mixer	1	The mixer is self-contained to reduce particulate emissions. Since the mixer does not have any control devices, an O&M Plan is not required

D. EMISSIONS:

FACILITY WIDE ALLOWABLE EMISSIONS

Pollutants	Engines	Feed Mill	Gasoline Storage	Facility wide Daily Emissions	Facility wide Annual Emissions
CO:	21,858 lbs/yr				21,858 lbs
NOx:	49,878 lbs/yr				49,878 lbs
PM2.5:	3,138 lbs/yr	10,000 lbs/yr		27 lbs	13,138 lbs
PM10:	3,138 lbs/yr	18,000 lbs/yr		49 lbs	21,138 lbs
PM	3,138 lbs/yr	44,000 lbs/yr		121 lbs	47,138 lbs
VOC:	2,607 lbs/yr		4,800 lbs/yr	14 lbs	7,407 lbs
SOX:	127 lbs/yr				127 lbs

E. HAP EMISSION IMPACTS:

Based on the information provided in the permit application, the facility emits insignificant amount of HAPs; therefore, SCREEN modeling was not performed per the Department's HAPs policy.

F. PERFORMANCE TESTING:

Testing is not required for this facility at this time.

G. REGULATORY REQUIREMENTS AND MONITORING:

Condition 1 states that the Permittee must submit a permit revision before reconnecting the crematory to a fuel source. The facility was previously permitted for a crematory but it is no longer used.

Condition 2 was included since the facility was issued an NOV for a mulch fire 03/07/14.

Conditions 3-5 were taken from Rule 320 and were included due to the potential for odors from the composting operation.

Conditions 6-15 are based on the most current template for emergency engines subject to Rule 324, NSPS IIII and 40 CFR 63 Subpart ZZZZ. The operating limit was set at 360 hours per year to keep the facility from exceeding the BACT threshold for annual NO_x emissions of 25 tons/yr. To avoid the appearance of circumvention under Rule 241 Section 303, the emission limits were not increased above the BACT limit for new stationary sources since the facility has been steadily growing by adding new barns and emergency generators each year.

Conditions 16-20 regulate the non-retail gasoline storage tank, which is subject to Rule 353 and 40 CFR 63 Subpart CCCCCC.

Conditions 21-24 are based on a template for sources subject to Rule 311. Emission calculations indicate that it is necessary to control emissions from the feed mixer and corn grinder to keep the feed mill from exceeding the BACT threshold for annual PM₁₀ emissions and Rule 311 limits calculated in accordance with Rule 311 §301.2. Condition 24, therefore, requires the feed mixer and corn grinder to be self-contained and not vented to the atmosphere during operation.

Rule 311 Evaluation

$$E = 17.31 P^{0.16} \text{ (P = greater than 30 tons/hr)}$$

Where:

E = Emissions in pounds per hour, and

P = Process weight rate in tons per hour.

If the facility operates 365 days per year, the average throughput is 651 tons/day and uncontrolled PM emissions are 490 lbs/day (see calculation spreadsheet for throughput and daily emissions). Based on these values, the mixer must be operated at least 15.58 hrs/day to keep from exceeding the hourly Rule 311 limit:

$$490/t = 17.31 (651/t)^{0.16}$$

Solving for t results in 15.58 hrs/day.

Therefore, it is not unreasonable to assume that the facility will exceed the Rule 311 hourly limits if emissions from the mixer and grinder are not controlled.

APPENDIX



040136 Emission
Worksheet



K. Costello -
Agricultural Exemption

Emission Worksheet for New Diesel Engines

360 annual hours of operation

1 KW= 1.341 HP

40 CFR 89 Non-Road Diesel Engine Standards

Rated Power	Emission Standard	Emission Factors (g/kw-hr)			
		CO	NMHC + NOx	PM	HC
130≤kW<560	Tier 3	3.5	4	0.2	1.3
kW>560	Tier 2	3.5	6.4	0.2	1.3

Cummins QSL9-G7 NR3 Manufacturer's Specifications

NOx:	1306 g/hr
VOC:	32 g/hr

Emissions

Except as noted, CO, NOx and PM10 emission factors are set at the appropriate emission standards for non-road diesel engines specified in 40 CFR 89.112. VOC emissions are set at the Tier 1 limit since Tier 3 standards consist of NOx plus non-methane hydrocarbons rather than VOC alone. The SOx factor was taken from AP-42 Table 3.4-1 and is based on the sulfur content of diesel fuel burned in the engines.

	Emission Factors	Factor Source
SOx:	0.0001 lbs/hp-hr	AP-42

I.D. #	Power (HP)	Engine Year	Emission Standard	Emissions (lbs/yr)				
				CO	NOx:	PM10	VOC:	SOx:
G-1	755	2010	Tier 2	1,564	2,860	89	581	33
G-10	310	2007	Tier 3	642	734	37	239	14
G-11	352	2007	Tier 3	729	833	42	271	15
G-12	685	2008	Tier 3	1,419	1,622	81	527	30
G-13	422	2008	Tier 3	874	999	50	325	18
G-14	422	2008	Tier 3	874	999	50	325	18
G-15	237	2008	Tier 3	491	561	28	182	10
G-16	422	2008	Tier 3	874	999	50	325	18
G-17	422	2010	Tier 3	874	999	50	325	18
G-18	422	2010	Tier 3	874	999	50	325	18
G-19	422	2010	Tier 3	874	999	50	325	18
G-20*	464	2012	Tier 3	961	1,037	55	25	20
G-21*	464	2012	Tier 3	961	1,037	55	25	20
G-22*	464	2012	Tier 3	961	1,037	55	25	20
G-23*	464	2012	Tier 3	961	1,037	55	25	20
G-24*	464	2012	Tier 3	961	1,037	55	25	20
G-25*	464	2012	Tier 3	961	1,037	55	25	20
FM1	324	2010	Tier 3	671	767	38	249	14
Total:	7979			16,528	19,592	944	4,147	349

*Emission rates for NOx and VOC are based on the engine manufacturer's specification sheet.

Emission Worksheet for Old Diesel Engines

I.D. #	Power (HP)
G-2	380
G-3	380
G-4	380
G-5	380
G-6	380
G-7	380
G-9	380
TOTAL	2,660

360 annual hours of operation

0.015% S, allowable sulfur content in fuel

SO_x = 0.00809(S) AP-42 Table 3.4-1

Emission factors (AP-42 Table 3.3-1)

CO: 0.0067 lbs/hp-hr
 NO_x: 0.0310 lbs/hp-hr
 PM₁₀: 0.0022 lbs/hp-hr
 PM: 0.0022 lbs/hp-hr
 VOC: 0.0025 lbs/hp-hr
 SO_x: 0.0001 lbs/hp-hr

Generator Emissions

	Old Generators	New Generators	Total Emissions
CO:	6,397 lbs/yr	16,528 lbs/yr	22,925 lbs/yr
NO _x :	29,686 lbs/yr	19,592 lbs/yr	49,278 lbs/yr
PM ₁₀ :	2,107 lbs/yr	944 lbs/yr	3,051 lbs/yr
PM _{2.5} :	2,107 lbs/yr	944 lbs/yr	3,051 lbs/yr
VOC:	2,404 lbs/yr	4,147 lbs/yr	6,551 lbs/yr
SO _x :	117 lbs/yr	349 lbs/yr	466 lbs/yr

Gasoline Storage Tanks Worksheet:

Maximum throughput			
120,000	gallons/year		
10,000	gallons/month		
Aboveground Tank VOC Emission Rate: (Emissions Inventory Instruction Sheet)		40 lbs/1000 gal.	
VOC Emissions			
Daily:	14 lbs VOC/day	Based on 30 days per month.	
Monthly:	400 lbs VOC/mo.		
Yearly:	4,800 lbs VOC/year		

Company: Hickman's Egg Ranch
 Permit: 040136

Annual working days: 365

Feed Materials Throughput (tons/yr)

corn	128,640
soybean meal	60,000
meat/bone meal	17,400
pet food fines	3,600
limestone	26,040
salt	600
mineral mix	120
lysine granules	180
Tylan premix	120
choline chloride	108
MHA	650
yeast culture	120
aureomycin	120
EN 180 enzyme	48
	237,746 tons/yr
	651 tons/day

Emissions

Process	Material	Throughput tons/yr	Emission Factors (lbs/ton)			Control Efficiency	Emissions (tons/yr)			Emissions (lbs/day)			PM PTE (lbs/day)
			PM10	PM2.5	PM		PM10	PM2.5	PM	PM10	PM2.5	PM	
Grain receiving to elevator ¹	Corn, Soy meal	188,640	0.0078	0.0013	0.035	0%	1,471	245	6,602	4.0	0.7	18.1	18.1
Grain Handling ²	Corn, Soy meal	188,640	0.034	0.0058	0.061	0%	6,414	1,094	11,507	17.6	3.0	31.5	31.5
Storage bin vents ³	Dry feed components	237,746	0.0063	0.0011	0.025	0%	1,498	262	5,944	4.1	0.7	16.3	16.3
Bulk receiving to feed mill ^{4,8}	Dry feed components	237,746	0.0025		0.017	0%	594	594	4,042	1.6	1.6	11.1	11.1
Grinding ^{5,8,9}	Corn	128,640	0.06		0.12	90%	772	772	1,544	2.1	2.1	4.2	4.2
mixing ^{6,8,9}	Dry feed components	237,746	0.286		0.572	90%	6,800	6,800	13,599	18.6	18.6	37.3	37.3
Shipping ^{7,8}	Dry feed components	237,746	0.0008		0.0033	0%	190	190	785	0.5	0.5	2.1	2.1
Total:							17,739	9,957	44,022	49	27	121	49

1. Source: AP-42 Table 9.9.1-1 (SCC 3-02-005-52)

2. Source: AP-42 Table 9.9.1-1 (SCC 3-02-005-30)

3. Source: AP-42 Table 9.9.1-1 (SCC 3-02-005-40)

4. Source: AP-42 Table 9.9.1-2 (SCC 3-02-008-02)

5. Source: EPA FIRE database (SCC 3-02-008-05)

6. Source: Emissions Inventory (SCC 3-05-011-09)

7. Source: AP-42 Table 9.9.1-2 (SCC 3-02-008-03)

8. No factors for PM2.5 could be found so PM2.5 is assumed to equal PM10.

9. PM factors were not available so PM is assumed to be 2x PM10.

10. Potential PM emissions were calculated assuming the mixer is uncontrolled to determine Rule 311 compliance.



NON-TITLE V COMPLETENESS DETERMINATION CHECKLIST

Items 1-15 Front page: Items 1 to 15 (14 for Renewals) must be completed.

Notes to engineer:

- For renewal applications the source must either answer 'No' to questions 2-5 or submit an application for a permit modification.
- Item 8: Many applicants do not know the SIC code or NAICS code for their industry. For a new application the code can be obtained by doing an on-line search. <http://www.osha.gov/pls/imis/sicsearch.html>
- Items 5, 7 and 14: These may be the same for many applicants.

Complete: ☒ Incomplete: ☐

Item 16: A simple site diagram has been included, preferably on a standard size paper. Detailed blueprints or construction drawings are not required.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 17: A simple process flow diagram on a standard size paper is preferred. A process flow diagram may not be needed for some small businesses.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 18: An O&M plan is required only for a control device. An O&M plan is not required for a spray booth. Instead of including the O&M plan with the application, an applicant may submit it after receiving the permit.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 19: A dust control plan, if required, must accompany the permit application. The plan will be reviewed and approved by the dust compliance group.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 20: The applicant needs to complete only those sections of the permit application that are applicable.

Complete: ☒ Incomplete: ☐ N/A: ☐

Notes to engineer:

- Concerning Section Z: Many applicants will not be able to perform these engineering calculations. We will accept the permit application with a blank Section Z.

Instructions for completing Sections A, B, C, D, E-1, E-2, F, G, H, I, J, K-1, K-2, K-3, K-4, L, M, X-1, X-2, Y and Z of the permit application are included at the beginning of each section and are self-explanatory.

In general, a material safety data sheet (MSDS) is required for each chemical used, stored or processed at the facility. Exceptions are for very common materials, such as gasoline, diesel, acetone, etc.

Business name: Hickman's Egg Ranch

Permit number: 040136

Completeness review completed.

Application determined to be:

Complete: ☒ Incomplete: ☐

Permit Engineer: Sara Seuberling

Date: 7/29/2014